Upcoming Investigations

Tissue Chemistry

Plans are currently being developed for the collection of tissue from lobster, finfish (flounder, tautog, bluefish) and channeled whelk to assess the potential bioaccumulation of contaminants in organisms at the existing disposal sites and at non-disposal areas within LIS. The assessment will include analysis for metals, PCBs, pesticides, bis(2-ethylhexyl)phthalate, lipid content, water content, PAHs, dioxins/furans, tributyltin, dioxin-like PCBs, and radiochemistry.

C. High (USACE) readies equipment for deployment. (Feb. 2000)

Physical Oceanography

The EPA and the Corps have initiated the collection and analysis of physical oceanographic data (currents, waves, temperature, salinity, etc.) to evaluate the circulation patterns and degree of water movement in LIS. Existing data, including the National Oceanic and Atmospheric Administration (NOAA) National Ocean Survey (NOS) and the State University of New York (SUNY), Stony Brook and the Disposal Area Monitoring System (DAMOS) data sets from LIS are being reviewed. The review will identify data gaps so that any information needed for the EIS can be collected during the calendar year 2000 field effort.

Fishing Resources and Activities

Fishing resources includes finfish and lobster resources. Fishing activities include commercial and recreational fishing activities. To collect finfish tissue for analyses, we will accompany the Connecticut Department of Environmental Protection (CTDEP) on its planned Spring and Fall 2000 trawl surveys of LIS. Since trawling is avoided in the vicinity of the WLIS site, other sampling methods, including gill nets and hook and line, are planned for that area. We will be collecting lobsters from the Study Areas and conducting tissue analysis.

We plan to interview commercial and recreational fishermen in the Spring and Summer of 2000 to further define the type and amount of fishing effort conducted in LIS including gear used in the Study Areas. These surveys will supplement the aerial surveys of lobster pot buoys. The aerial surveys will be taken during the peak season.

Schedule

Since the October 1999 workshops, a field work schedule has been developed, protocols drafted and refined along with the associated laboratory analyses. The field work for the open water disposal alternative has been scheduled to take advantage of the LIS resources during peak seasons.

- *Winter 2000* - Sediment sampling (completed)
- *Spring 2000* - Physical oceanographic data, finfish collection
- *Summer 2000* - Lobster collection, benthic tissue bioaccumulation/community analysis
- *Fall 2000* - Additional physical oceanographic data (if needed) and additional finfish collection

This schedule will complete a full year of data to assist in characterizing LIS.

An update on the status of the field program will be provided at the April 2000 workshops.

J. Brochi (USEPA) extracting sediments from the Ted-Young grab sampler. (Feb. 2000)

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Fact Sheet #3- April 2000

EPA United States Environmental Protection Agency

US Army Corps of Engineers
New England District

Long Island Sound Dredged Material Disposal EIS

Field Work for Open Water Sites

Background

The U. S. Environmental Protection Agency (EPA) and the U. S. Army Corps of Engineers (the Corps) are preparing an Environmental Impact Statement (EIS) that will consider the potential designation of one or more dredged material disposal site(s) in the waters of Long Island Sound (LIS), as required under Section 102 (c) of the Marine Protection, Research and Sanctuaries Act (MPRSA) and 40 CFR 230.80 of the regulations of the EPA under Section 404 of the Clean Water Act (CWA). The EIS will be prepared in accordance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500 et. seq.).

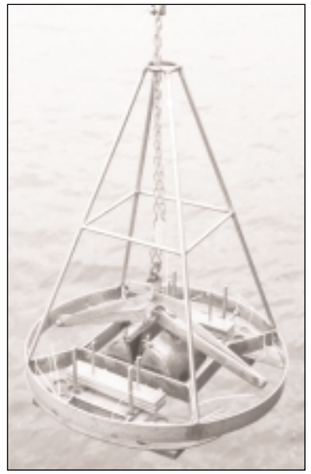
To provide baseline information on LIS, the EPA and the Corps reviewed and evaluated existing data to determine data collection needs. Based on that review, the EPA and the Corps are gathering data on all the alternatives to be evaluated in the EIS, including open water sites, beneficial use sites, upland disposal sites and treatment technologies. As an early task of this data collection effort, the EPA and the Corps identified data gaps associated with open water disposal. As reported at the October 1999 workshops and presented in a fact sheet titled "Data Review and Recommendations," data gaps associated with open water disposal sites were identified in four priority areas:

- *Sediment chemistry* - Distribution of contaminants of concern in sediments at, and immediately around, each active disposal site in LIS
- *Tissue chemistry* - Distribution of contaminants of concern in tissue of shellfish (including lobsters), finfish and benthic invertebrates, at and immediately around, each active disposal site in LIS.
- *Physical oceanography* - Physical oceanographic data from LIS that may be applicable to disposal site designation, including general circulation, wave, and current information relevant to each active disposal site in LIS, and in proximity to those sites.
- *Fishing resources and activities* - Commercial and recreational fisheries resources and activities in proximity to the active disposal sites in LIS, including any baseline fish, shellfish, and lobster data.

The field data collection effort is underway. The field work is being coordinated with other federal and state agency efforts scheduled for the calendar year 2000, including finfish trawl surveys planned by the Connecticut Department of Environmental Protection (CTDEP). This fact sheet provides a status report on the field work necessary to assist in the preparation of the EIS baseline and impacts analyses.

Sampling Program Overview

The overall field program associated with the open water disposal alternative includes the collection of sediment samples, benthic samples, and lobster and finfish tissue samples within LIS. It also includes collection and analysis of data regarding currents, waves, temperature, salinity and other physical



Ted-Young grab sampler modified with landing pads to facilitate sampling in soft bottom conditions. (Feb. 2000)

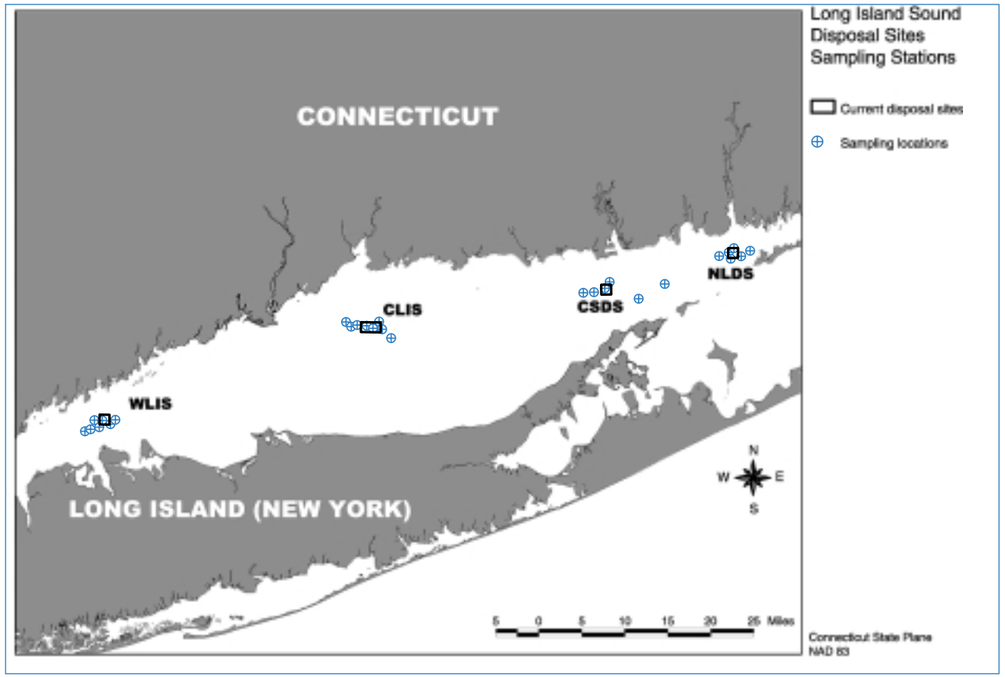


Figure 1. Long Island Sound Disposal Sites and Sampling Stations

oceanographic characteristics of LIS. This data will be used in evaluating baseline conditions within the open water of LIS, including the four existing disposal sites, referred to as Study Areas. The Study Areas are:

- Western Long Island Sound (WLIS)
- Central Long Island Sound (CLIS)
- Cornfield Shoals (CSDS)
- New London (NLDS).

As reported below, an extensive sediment sampling effort was conducted during February 2000. Planned for future seasons are the collection of lobsters and finfish, physical oceanographic data and additional sampling of benthic species in LIS.

Winter 2000 Field Survey - Sediment Sampling

During the week of February 14, 2000, the EPA and the Corps conducted sediment sampling for the analysis of sediment chemistry and the characterization of the local benthic communities at the four Study Areas (see Figure 1). For each Study Area, sediment samples were collected within each of four distinct geographical areas:

- ***Historical*** - areas that received dredged material prior to the onset of testing requirements in 1979
- ***Active*** - areas that have received dredged material deemed suitable for open-water disposal
- ***No impact*** - areas that should have no discernible impacts from the disposal of dredged material, i.e., a "reference site" for each Study Area
- ***Far field*** - areas outside of existing site boundaries suitable for evaluating for any distant effects of disposal of dredged material within LIS.

At each sampling station, five (5) discrete grabs (125 total grabs) were taken in order to obtain enough material for the determination of physical, chemical, and toxicological properties.

The sampling procedure is shown in Figure 2. A grab sampler was deployed from the survey vessel F/V Isabelle to retrieve bottom sediments. Sediments from each grab were divided up for different types of analyses. These included:

- ***Chemistry*** - the chemical analysis of the sediments.
- ***Toxicity*** - the exposure in the laboratory of a benthic species to the collected sediments to determine if the sediments are toxic to the species.
- ***Biology*** - the benthic species found within the sediment sample to identify the composition of the biological community to include diversity and populations present.

In total, over 1,100 samples were collected and delivered to laboratories for chemistry, grain size and toxicity analyses.

During the collection of sediment samples in the Winter 2000 survey, provisions were made for the collection of benthic invertebrates for potential analysis of tissue samples for bioaccumulation. However, given the season and associated water temperature, limited invertebrates were collected during this survey.

Chemistry/Physical Testing

From the samples collected at each station, sediments will be analyzed for a list of contaminants, including metals, polychlorinated biphenyls (PCBs), pesticides, polyaromatic hydrocarbons (PAHs), acid volatile sulfides/simultaneously extractable metals, bis(2-Ethylhexyl)phthalate, dioxins/furans, dioxin-like PCBs, tributyltin, total organic carbon (TOC), radiochemistry, and for percent water and grain size. Sediments will be tested in accordance with "Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual, EPA-503/8-91/001, February 1991," commonly referred to as the "Green Book" and the U.S. Army Corps of Engineers New England District "Inland Testing Manual (ITM) for Dredged Material Disposal Activities" dated July 7, 1998, as appropriate, and as supplemented by additional guidance.

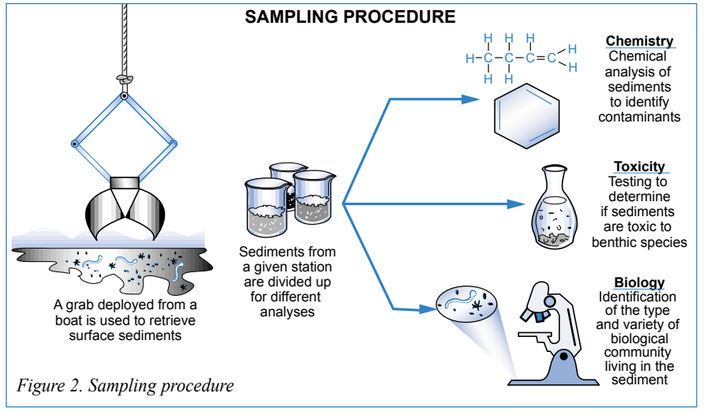


Figure 2. Sampling procedure

Recovering the 0.1m² Ted-Young grab sampler. Feb. 2000

Toxicity Testing

From the samples collected at each station, a portion of the sediment material was collected for toxicity analysis. Following the procedures outlined in the publication: EPA, 1994 "Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods," EPA 600-R-94-025, June 1994, toxicity testing will be performed with the amphipod *Ampelisca abdita*. This amphipod will be exposed in the laboratory to collected sediment as a measure of the toxicity of the sediment to benthic resources.

Benthic Community Analysis

Three additional grabs were performed at 21 stations to collect materials for benthic community analysis. These samples were transferred to a clean 5-gallon plastic bucket where they were rinsed with local seawater. After a careful filtering and sieving of the material, the consolidated sample was then removed from the sieve and transferred to sample bottles. Local seawater was then added to the sample, after which the sample was preserved. The samples collected will be identified and counted to determine the diversity and population of benthic invertebrates in the existing marine ecosystem.